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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,866	07/28/2003	Yutaka Yamada	030910	3634

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EXAMINER

BERMAN, SUSAN W

ART UNIT PAPER NUMBER

1711

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/627,866	<b>Applicant(s)</b> YAMADA ET AL.	
	<b>Examiner</b> Susan W Berman	<b>Art Unit</b> 1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/03; 1/04</u> | 6) <input type="checkbox"/> Other: ____  |

*Specification*

The Specification is objected to because there are no headings, such as "Background of the Invention", "Summary of the Invention", etc.

*Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "contains (meth)acrylate which dissolves the polymeric dispersant" does not clearly set forth that the "(meth)acrylate" required to dissolve the dispersant is a (meth)acrylate compound that is the "photopolymerizable compound" recited in claim 1 (see [0029]). It is suggested that claim 4 be rewritten to depend from claim 3 or to recite "wherein the photopolymerizable compound comprises a (meth)acrylate compound which dissolves the polymeric dispersant". It is suggested that claim 5 be rewritten to depend from claim 4 or to recite "wherein the photopolymerizable compound comprises 2-hydroxy-3-phenoxypropyl acrylate which dissolves the polymeric dispersant".

*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/46323 in view of Emmons et al (6,080,802). WO '323 discloses UV curable ink jet inks comprising reactive monomers and oligomers, a pigment, and a photoinitiator. The pigment can be titanium dioxide coated with

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functional groups (page 4, last paragraph). The dispersants are selected from dispersants with acidic groups, dispersants with amine groups, anionic, cationic and nonionic polymers and polyacrylates containing pigment affinic groups (page 5 and the bridging paragraph from page 7-8). Compositions comprising urethane oligomers and di- or tri-acrylate monomers are taught on page 6. WO '323 does not specifically mention that the titanium dioxide is surface treated with silica and alumina and that the weight of silica is larger than that of the alumina, as set forth in instant claim 1.

Emmons et al disclose a process for preparing an aqueous dispersion of composite particles including a polymeric latex adsorbed to titanium dioxide to give a low viscosity slurry or pigment grind. The titanium dioxide particles can be pretreated to provide inorganic surface coatings of silica, aluminum oxide or mixtures of silica and aluminum oxide to adjust the surface potential of the particles (column 32, lines 20-38). Emmons et al do not teach compositions comprising photopolymerizable monomers and a photoinitiator.

It would have been obvious to one skilled in the art at the time of the invention to employ titanium oxide particles pretreated with a mixture of silica and aluminum oxide disclosed by Emmons et al as the titanium dioxide coated with functional groups in the compositions taught by WO '323. WO '323 provides motivation by teaching that titanium dioxide coated with functional groups is a suitable pigment in the disclosed ink compositions. Emmons et al provide motivation by teaching that titanium dioxide particles can be pretreated to provide inorganic surface coatings of silica, aluminum oxide or mixtures of silica and aluminum oxide to adjust the surface potential of the particles. One of ordinary skill in the art at the time of the invention would have been motivated by a reasonable expectation of providing pigment particles having a useful surface potential for ink jet printing. It would further have been obvious to one skilled in the art at the time of the invention to select a dispersant with amine groups from the small group of suitable dispersants taught by WO '323. WO '323 provides motivation by teaching that any of dispersants with acidic groups, dispersants with amine groups, dispersants comprising anionic,

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cationic and nonionic polymers and polyacrylates containing pigment affinic groups, such as pigment affinic amine groups, are suitable preferred dispersants for providing good dispersions of the pigment particles in the disclosed ink compositions. One of ordinary skill in the art at the time of the invention would have been motivated by a reasonable expectation of taking advantage of the amine functionality in the dispersant to neutralize the acidic nature of the silica treated titanium dioxide. With respect to claims 3-8, WO '323 teaches a mixture of oligomers and monomers including trifunctional urethane oligomers, such as tris(2-hydroxyethyl)isocyanurate triacrylate, and other (meth)acrylate monomers as reactive diluents for the disclosed compositions (page 6).

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

EP 11,036,831 discloses UV curable ink compositions comprising anatase titanium dioxide,, a urethane oligomer, a tri- or higher functional monomer, a photoinitiator and an aqueous solvent.

Ohta et al (5,954,866) disclose an ink composition for ink jet recording comprising a pigment, an anionic surfactant having a polyoxyethylene group, a dispersant and water. The numerous pigments disclosed include titanium dioxide. Dispersants disclosed include polyvinyl alcohols, polyvinylpyrrolidones, amine salts of the disclosed copolymers and others having a basic functional group (column 5, line 45, to column 6, line 51). Ohta et al do not teach adding photopolymerizable compounds or a photoinitiator.

Nishizaki et al (5,034,508) disclose a dispersant for a nonaqueous system, such as a printing ink, for dispersing insoluble fine powders in nonaqueous liquids that gives long term stability to the dispersion. The dispersant is a polyether derived from a polyamine or from a polyalkylenamine compound. The fine powders disclosed include titanium dioxide, aluminum hydroxide, and silica pigments (column 6, lines 18-21, and Table 2). Nishizaki et al do not teach adding photopolymerizable monomers or a photoinitiator.

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Kato et al (6,080,449) disclose an oil-based ink jet ink comprising resin particles dispersed in a nonaqueous carrier liquid and having excellent redispersibility, storage stability and press life (column 20, lines 49-67). The resin particle dispersion is added to a colorant dispersion in a polyacrylic resin (see column 37, lines 3-15, column 38, line 59, to column 39, line 4).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan W Berman whose telephone number is 571 272 1067. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571 272 1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Susan W Berman  
Primary Examiner  
Art Unit 1711

SB  
February 18, 2005